In the Specification:

Please replace the paragraph beginning on page 2, line 5, with the following rewritten paragraph:

In order to enhance track density of a magnetic disc medium, it is necessary to reduce the recording track width by narrowing the core width of a recording magnetic head. However, in the system utilizing a magnetic head for recording of information, extra-recording is conducted to the region (guard band) between the recording tracks with a leakage field generated from the side surface of the recording head. Such extra-recorded region is called the side erase which will become a cause of noise during the reproducing operation. Moreover, even when the core width of the recording magnetic head is narrowed by improving track density, since the width of side erase does not particularly change if the gap length and head flotation amount are not reduced, it is difficult, due to reduction of track width, to acquire the S/N ratio while reproducing the recorded data.

B1

Please replace the paragraph beginning on page 2, line 22, with the following rewritten paragraph:

Therefore, as illustrated in Fig. 1(b), there is proposed a disc medium 61 wherein a groove 9 is previously formed along the circumferential direction of a disc substrate 2 and then it is used as a guard band to physically isolate the track. The magnetic disc medium 61 is considered very effective for realizing higher density of the track because the track edge noise can be controlled when the groove has sufficient depth.

Please replace the paragraph beginning on page 3, line 3, with the following rewritten paragraph:

B1 Cont.

However, on the medium on which the groove is formed, an uneven surface having a level difference of several tens of nm to several hundreds of nm is finally left on the surface. When considering the future trend of the magnetic disc medium indicating that the flotation of the magnetic head becomes 30nm or less with enhancement of density of the magnetic disc medium, a problem of reliability will occur due to the reason explained below.

Please replace the paragraph beginning on page 3, line 12, with the following rewritten paragraph:

In the hard disc drive, high speed revolution of disc generates air flow to float a slider mounting a magnetic head and thereby the magnetic head executes the data recording and reproducing operations through non-contact with the disc. However, it is known that if the disc has an uneven surface, the flotation amount of the slider varies to become unstable depending on disturbance of an air flow. This fact has been neglected when the flotation amount is comparatively as large as 50 nm to 100 nm, but it becomes a major problem when the flotation of slider is as small as 30 nm or less which will be required in the future.

Please replace the paragraph beginning on page 4, line 7, with the following rewritten paragraph:

In the magnetic recording medium of the present invention, groove and land are formed on a substrate and a magnetic film is laminated on this substrate. Therefore, tracks are magnetically isolated to reduce the track edge noise. Moreover, on the magnetic film on the groove, a non-magnetic material is deposited up to a position higher than the land surface on the substrate. According to this structure, a level difference resulting from the land and groove of the substrate is reduced at the surface of the medium and thereby the medium surface becomes almost flat. Therefore, the air flow generated by revolution of the medium is never disturbed and thereby stable floating of the magnetic head for recording or reproducing information to or from the magnetic recording medium can be assured.

B2

Please replace the paragraph beginning on page 4, line 22, with the following rewritten paragraph:

Moreover, in the present invention, after a magnetic film and a non-magnetic film are sequentially laminated on the substrate on which groove and land are formed, a non-magnetic film is fused through the heat process. Thereby, a non-magnetic material fuses on the groove to deposit a non-magnetic material on the groove. As a result, level difference between the groove and land is reduced on the medium surface to attain flatness of the medium surface. Here, the problem that the other materials are also fused when the non-magnetic material is heated can be eliminated by introducing, as the material of non-magnetic film, a material having the melting point lower than that of the other materials forming the magnetic recording medium. Moreover, when a non-magnetic material film

laminated on the land is fused and thereby eliminated from the land, the groove is perfectly filled with the non-magnetic material film and a flat surface of the medium can be attained without leaving extra non-magnetic film on the land by laminating the non-magnetic film in the depth of groove width/land width × groove depth.

B3 Cont

Please replace the paragraph beginning on page 6, line 18, with the following rewritten paragraph:

B3

Fig. 2 illustrates a cross-section of a magnetic recording medium 1 of the present invention. Namely, an underlayer film 3, a magnetic film 4 and a protection film 6 are sequentially laminated on a substrate 2 where a groove 8 and a land 9 are formed and a layer of lubricant 7 is formed on the protection film 6. Moreover, on the groove 8, a thin film 5 for smoothing is deposited up to the height of the magnetic film 4 on the land 9 via the underlayer film 3 and magnetic film 4 to eliminate a level difference at the laminated surface of the protection film 6. Therefore, the upper layers above the protection film 6 are flat in shape. Each film forming the magnetic recording medium 1 will now be explained.

Please replace the paragraph beginning on page 9, line 10, with the following rewritten paragraph:

B4

The underlayer 3 is not always required, and it is also possible to introduce a structure wherein a magnetic film 4 is laminated on the substrate 2 not by way of the underlayer. Moreover, the underlayer 3 may also be formed in amulti-layer structure.

Please replace the paragraph beginning on page 12, line 11, with the following rewritten paragraph:

As explained above, in this embodiment, since the groove is filled with the smoothing thin film material by heating and fusing this material, the smoothing thin film 5 is formed of a material having a melting point which is lower than that of the other materials also forming the medium 1 so that these other materials are never fused when the smoothing thin film material is fused. Moreover, since the smoothing thin film 5 is heated with a laser beam, a higher light absorbing coefficient is also required. The material satisfying such requirements, Te or a compound which is mainly composed of Te with inclusion of any one of C, Se and S may be listed. Particularly, Te has a melting point of 450°C which is extremely lower than that of the material forming the magnetic film 4 and assures a higher light absorbing coefficient in the wavelength of the semiconductor laser. Moreover, the compounds such as TeC, TeSe, $TeCS_2$ have excellent oxidation proof characteristics and higher photo- sensitivity in comparison with discrete Te.

B5

Please replace the paragraph beginning on page 13, line 11, with the following rewritten paragraph:

Moreover, as illustrated in Fig. 6, an interval between the laser beam of heating laser 14 and the laser beam of tracking laser 15 is adjusted to become equal to an interval d between the land 8 and groove 9 and moreover the tracking laser 15 is allocated before the heating laser 14 for the moving direction of the actuator 13 indicated with the arrow marked

B6

A. Namely, when the laser beam of the tracking laser 15 radiates the groove 9, the laser beam of heating laser 14 and the land 8 overlap with each other.

B6 cont

Please replace the paragraph beginning on page 13, line 21, with the following rewritten paragraph:

17 designates a timer which is reset when it counts up the preset time of the preset heating laser 14 for radiation on the land. 18 designates a counter to which the number of lands of disc medium 1 is set and this preset value is subtracted each time when the timer 17 is reset. Namely, this counter is reset when the number of times of reset of timer is matched with the number of lands of the disc medium 1.

Please replace the paragraph beginning on page 14, line 2, with the following rewritten paragraph:

A controller 11 determines, when detection of reset of the timer 17 occurs, that the groove filling process being executed is completed and drives the actuator 15 in the direction of the arrow marked A of Fig. 6 in order to move the laser beam of heating laser 14 to the neighboring groove. The controller 11 determines, when it is detected that the laser beam of tracking laser 15 radiates the groove 9, that the laser beam of heating laser 14 is located on the land 8 and it stops operation of actuator 16 and starts again the operation of timer 17. Moreover, when the controller 11 detects that a value of counter 18 is 0, it determines that all grooves on the disc 1 are filled and instructs the heating laser 15 to stop

B6 cont

radiation to the land. In the above example, since the actuator 15 is moved in an interval of constant time, the amount of heat received from the laser fluctuates among the lands due to the difference in the length of the circumferential direction. Therefore, it is allowed that the number of rotations of spindle motor 12 is counted and the actuator 15 is moved in every constant number of rotations.

Please replace the paragraph beginning on page 15, line 11, with the following rewritten paragraph:

B7

A lubricating film 7 is composed of a fluorocarbon resin-based material and has the thickness of 0.5 nm to 2 nm. The lubricating film 7 is formed in such a manner that a film of lubricant is formed on the medium when the medium 1 is soaked into the solution including the above material. Thickness of the lubricating film 7 depends on the concentration of material in the solution and the rate of speed of removal of the medium from the solution.

Please replace the paragraph beginning on page 18, line 24, with the following rewritten paragraph:

B8

The smoothing thin film 5 is formed by moving the substrate 2 to the other sputtering apparatus because the gas to be introduced into the sputtering chamber is different from that used when the underlayer and magnetic film are formed. The smoothing thin film 5 is formed, after the inside of sputtering chamber is evacuated to 1 × 10-8Torr, on the

magnetic thin film 4 in thickness of 6 nm under the conditions that the substrate temperature is 20°C and gas pressure in the sputtering chamber is 5mTorr in the mixing ratio of CH_4:Ar of 1:9. After the smoothing thin film 5 is formed, the smoothing process is executed. The smoothing process is conducted by rotating the substrate 2 in the speed of 1000 rpm and the smoothing thin film 5 of each land is irradiated with the semiconductor laser 10 in the wavelength of 790 nm and laser power of 2.5 mW in maximum. As a result of the smoothing process, the smoothing thin film 5 on the land flows onto the groove and the level difference at the surface of medium has been reduced up to 2nm.

B8 Cont

Please replace the paragraph beginning on page 20, line 3, with the following rewritten paragraph:

B9

The lubricating film 7 is composed of fluorocarbon and formed in the thickness of 2 nm on the protection film 6.

Please replace the paragraph beginning on page 21, line 6, with the following rewritten paragraph:

B10

Fig. 12 illustrates the results of the relationship between the level difference between the land and the groove at the surface of the disc medium and the flotation duration time of the head. As is apparent from the Table 1, when the medium has a level difference of 5nm or less, a collision with the head does not occur and the head can float for 1000 hours or longer. Meanwhile, when the medium has a level difference of 6 nm or more, a crash occurs

within several hours from the flotation of the head. In other words, the head can float for only a short period. From the results of Fig. 12, it can be understood, to obtain the stable floating of head, that the level difference between the land and the groove is set to 5 nm or less at the surface of medium.

Please replace the paragraph beginning on page 21, line 21, with the following rewritten paragraph:

B10 Cont

Fig. 13 illustrates a head floating duration time for a disc medium of the related art illustrated in Fig. 1. Since the groove is not formed on the substrate in the medium of Fig. 1(a), the surface is flat and the head can realize the floating of 1000 hours or longer. Meanwhile, in the case of medium illustrated in Fig. 1(b) wherein the groove is formed on the substrate, a crash has been generated within only hours.

Please replace the paragraph beginning on page 22, line 2, with the following rewritten paragraph:

From the result of Fig. 13 and Fig. 12, it can be understood that the flotation duration time identical to that of the flat medium on which the groove is never formed can be obtained because the magnetic memory medium of the present embodiment has the level difference of only 2nm between land and groove.